

Water and the California Economy



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A Consensus of 15 Experts

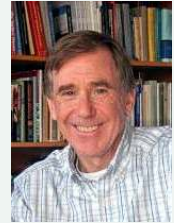
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Katrina Jessoe
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Brian Gray
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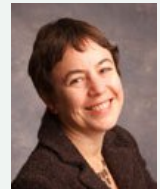
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David Sunding
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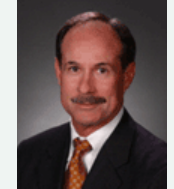
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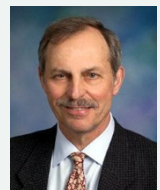
Josue Medellin-Azuara
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Buzz Thompson
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Richard Howitt
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Sheila Olmstead
Resources for the
Future



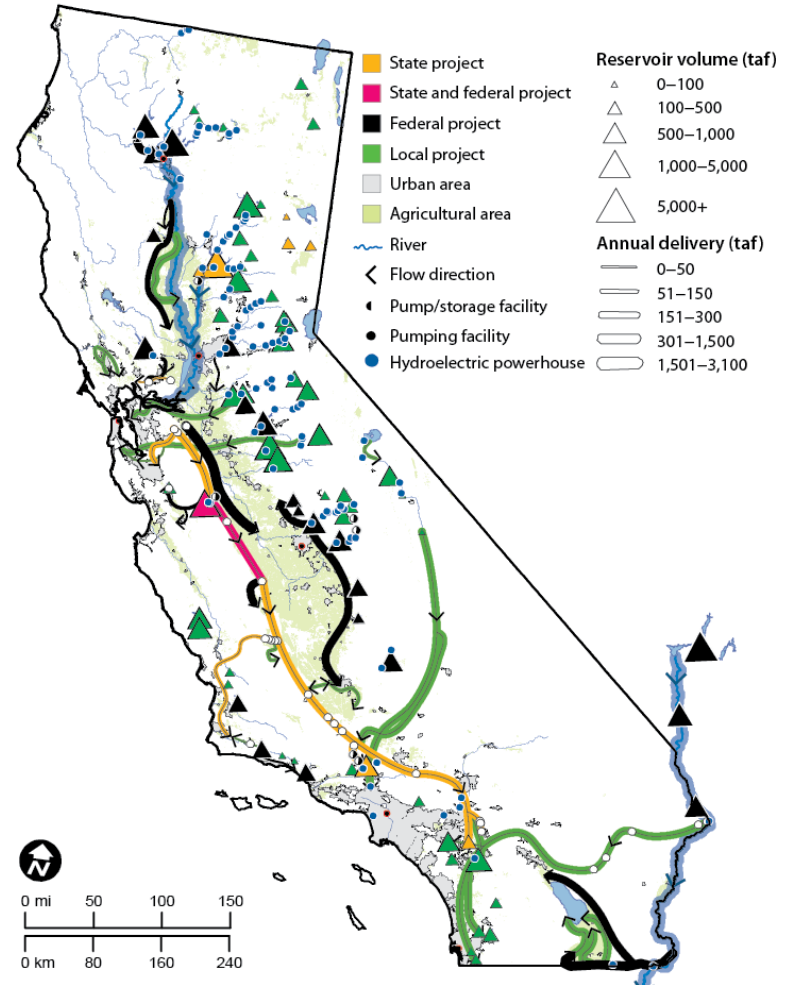
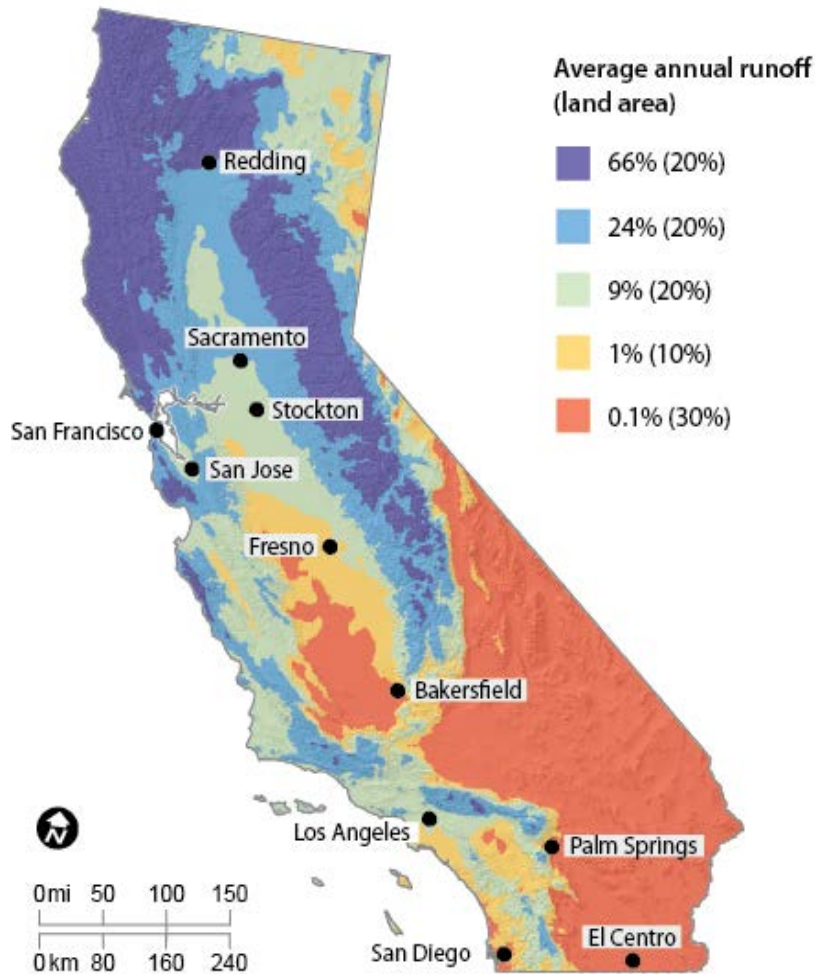
Robert Wilkinson
UC Santa Barbara



Outline

- Water's role in the economy
- Vulnerabilities
- Priorities for action
- Looking ahead

20th Century Legacy: A Highly Engineered Water System



A Lot Has Changed Since the Late 1960s: Cars...



1967 Pontiac Bonneville
20 mpg (highway)



2010 Prius
50 mpg

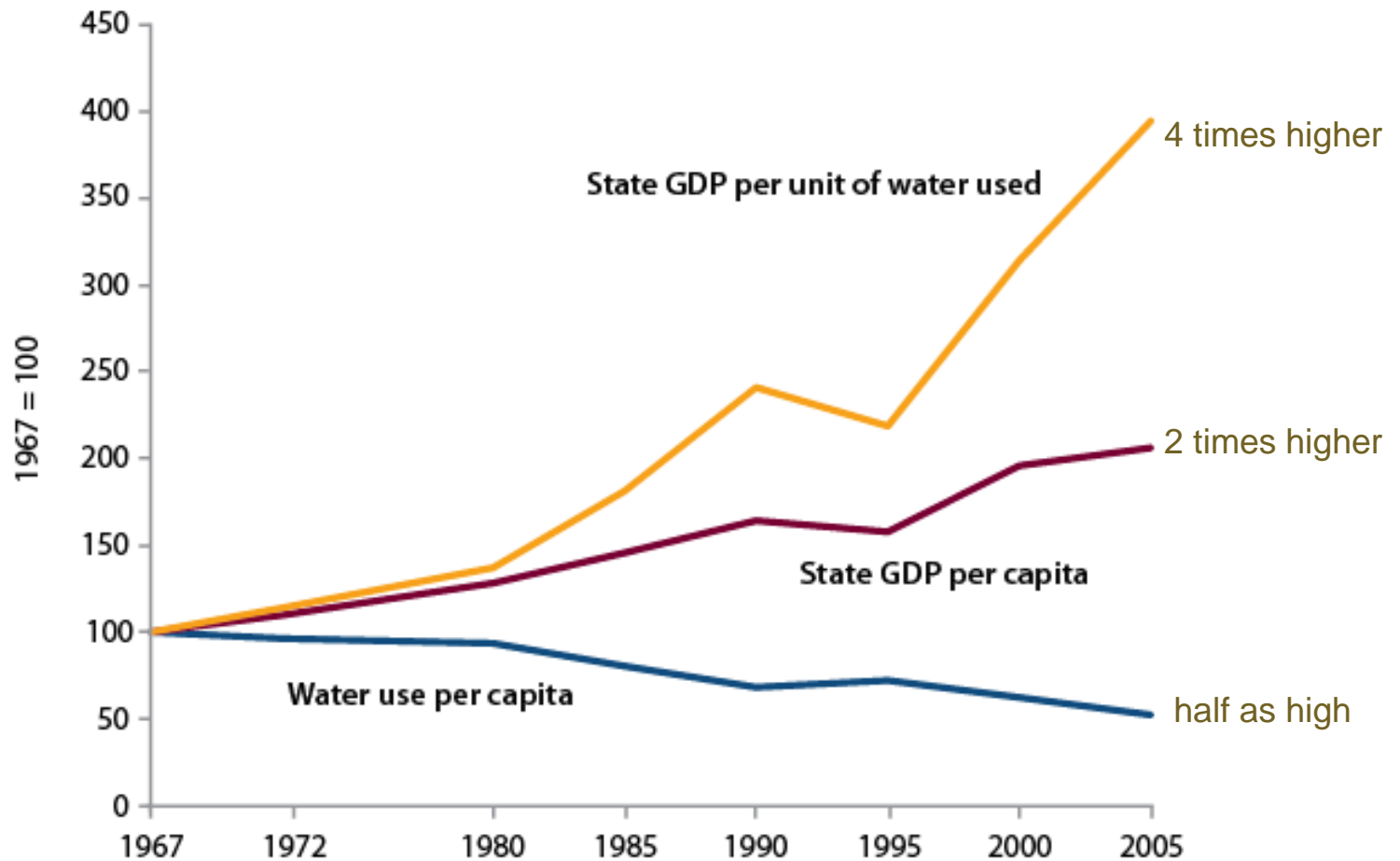
...Information Technology...



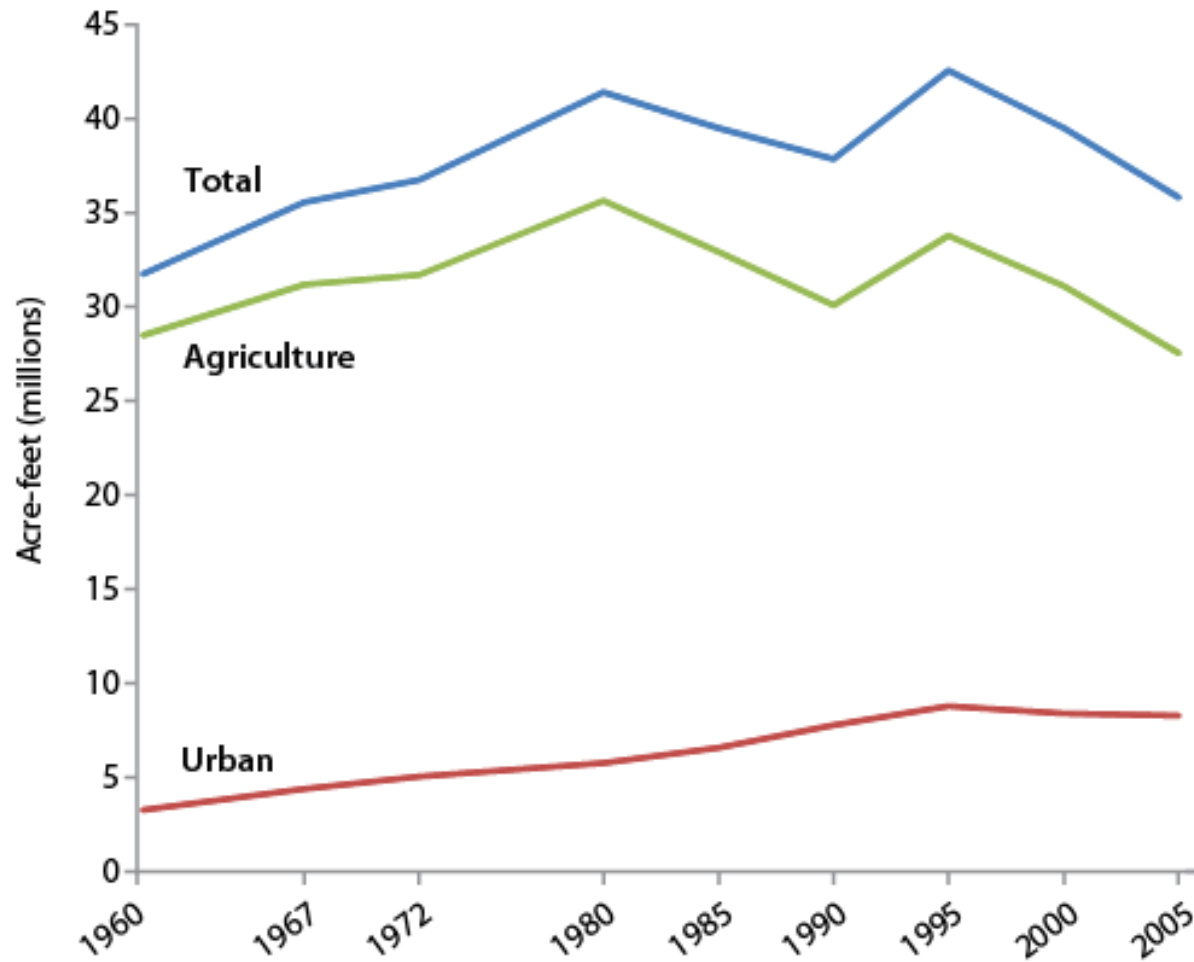
...Fashion...



...And Water Management



Human Water Use May Have Peaked in 1980s



Current Trends Likely to Continue

- Agriculture: less land and water, higher value crops
- Urban: continued efficiency gains
- Environment: continued demand growth

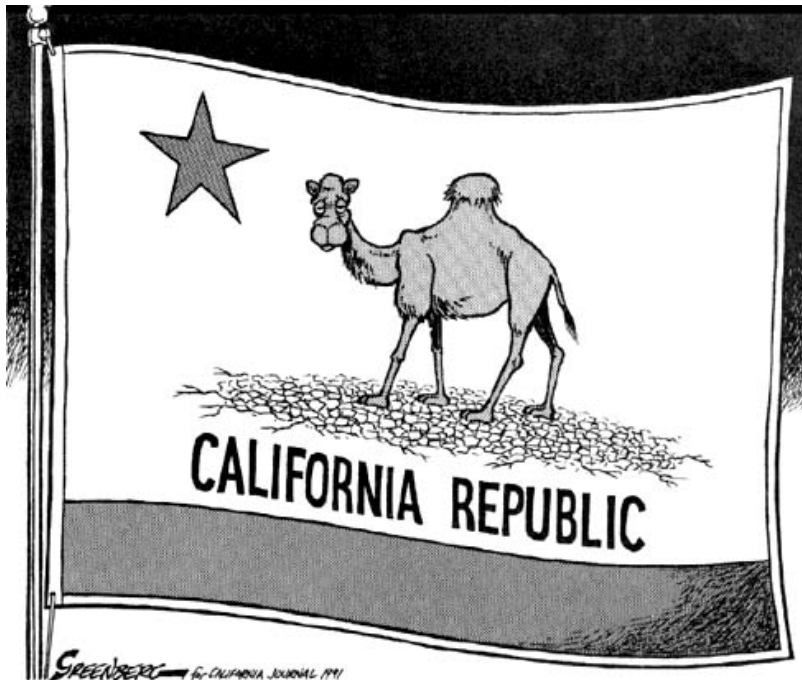


Mono Lake

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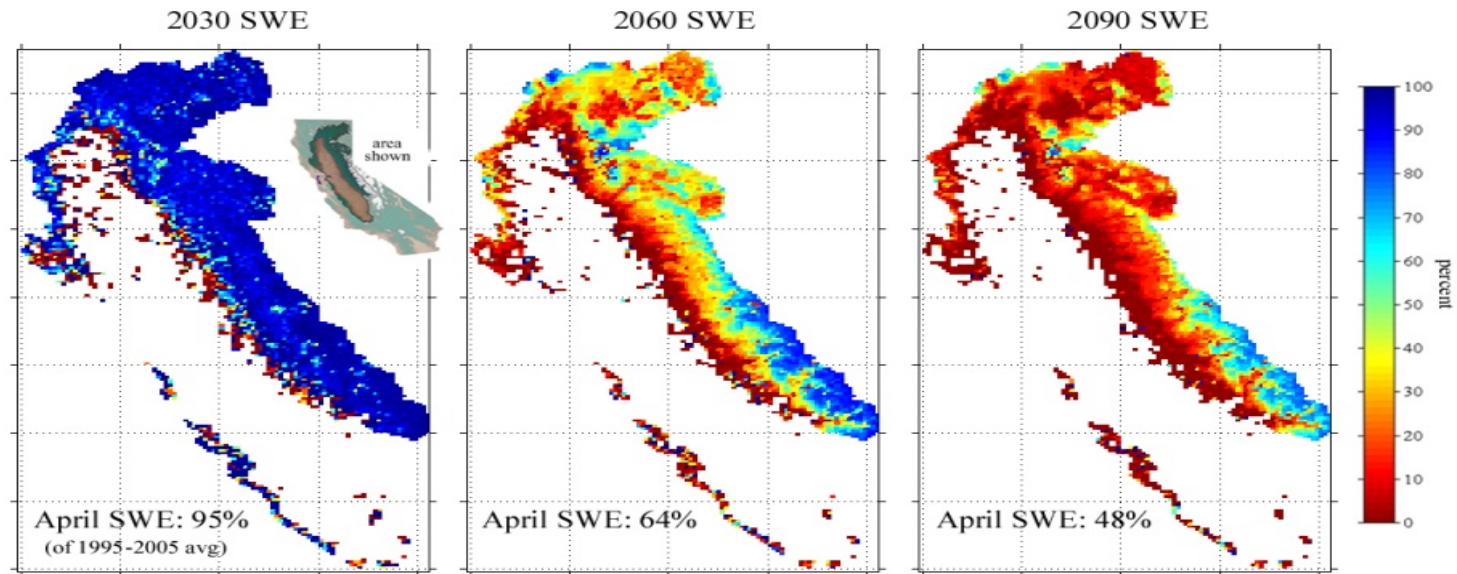
Economy Is Used to Weathering Periodic Droughts



California Journal, 1991

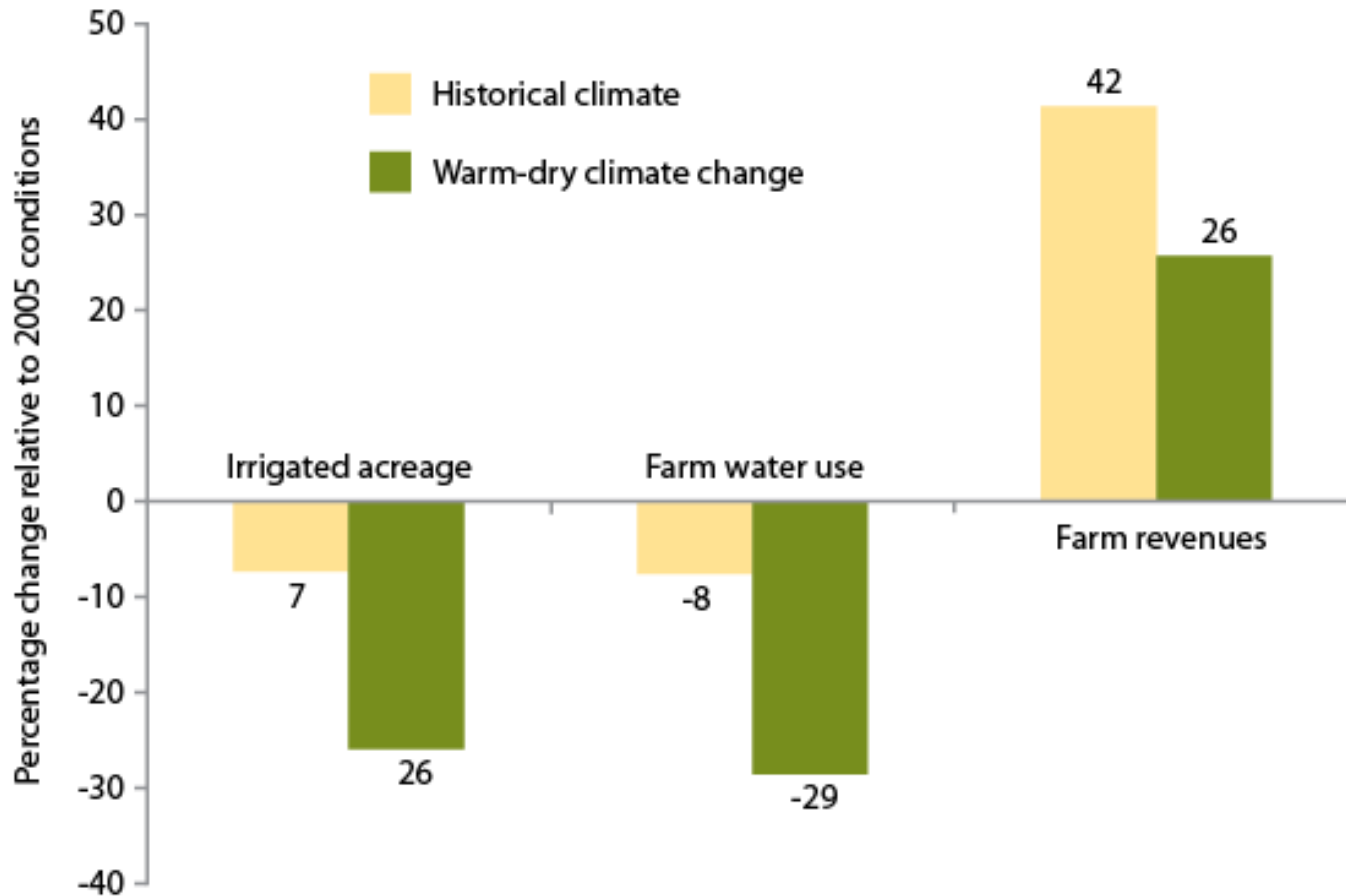
- Agriculture most vulnerable, but small share of economy (1-2% of GDP)
- Increasingly diversified portfolio helps:
 - Water use efficiency
 - Water markets
 - Groundwater banking
 - Recycled wastewater
 - Stormwater capture

Same Tools Will Help Economy Adapt to Climate Change

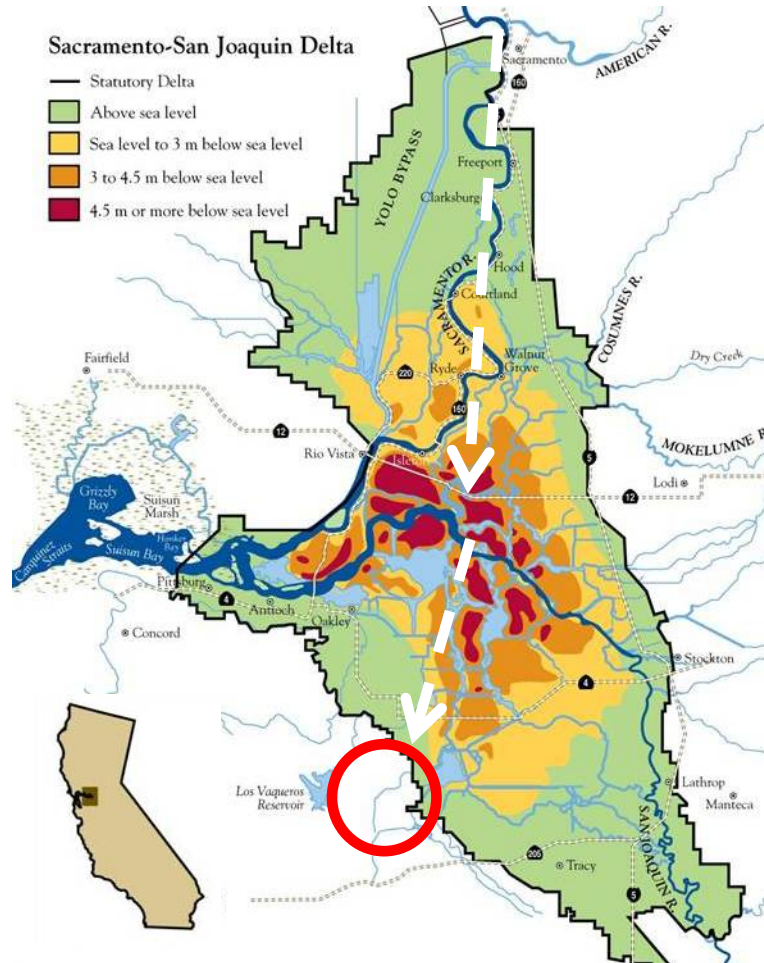


- Declining snowpack: less “free” storage
- Still unclear whether average precipitation will change

Farm Revenues Can Keep Rising, Even with a Warmer-Drier Climate



But Economy Is Vulnerable to Supply Interruptions, Unreliability



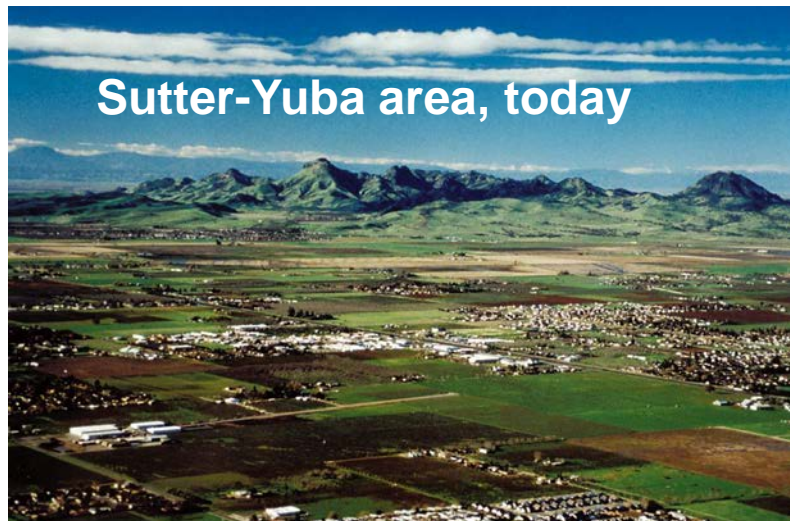
- Delta is a major hub at risk
 - Fragile levees
 - Imperiled ecosystem
- Some local systems are also vulnerable
- High short-term costs
- Potential for reduced long-term investments

Catastrophic Flood Risk Is Rising, Despite Recent Reforms

Sutter-Yuba area, 1997 floods



Sutter-Yuba area, today



- 2007 reforms doubled required urban protection
 - But still low (1-in-200 year flood)
 - Only in Central Valley
 - Will encourage more building behind levees
- Risk will worsen with warming, sea level rise, and growth

Groundwater Risks High in Some Regions

- Long-term overdraft and salination (unsustainable supply)
- Nitrate contamination of drinking water



Salinas Valley

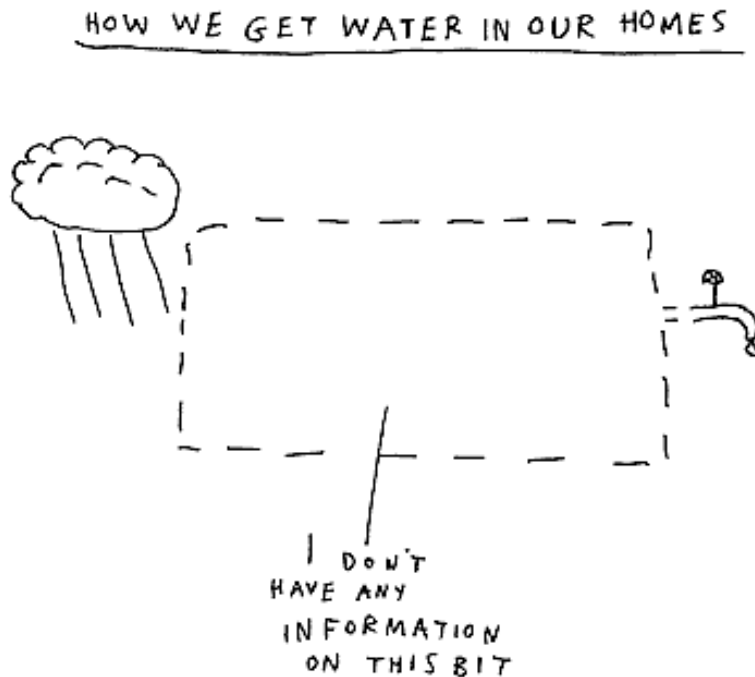


Tulare Basin

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Modernize Measurement and Pricing



CartoonChurch.com

- Employ advanced technology to measure groundwater use (satellite data)
- Pre-announce higher prices in dry years

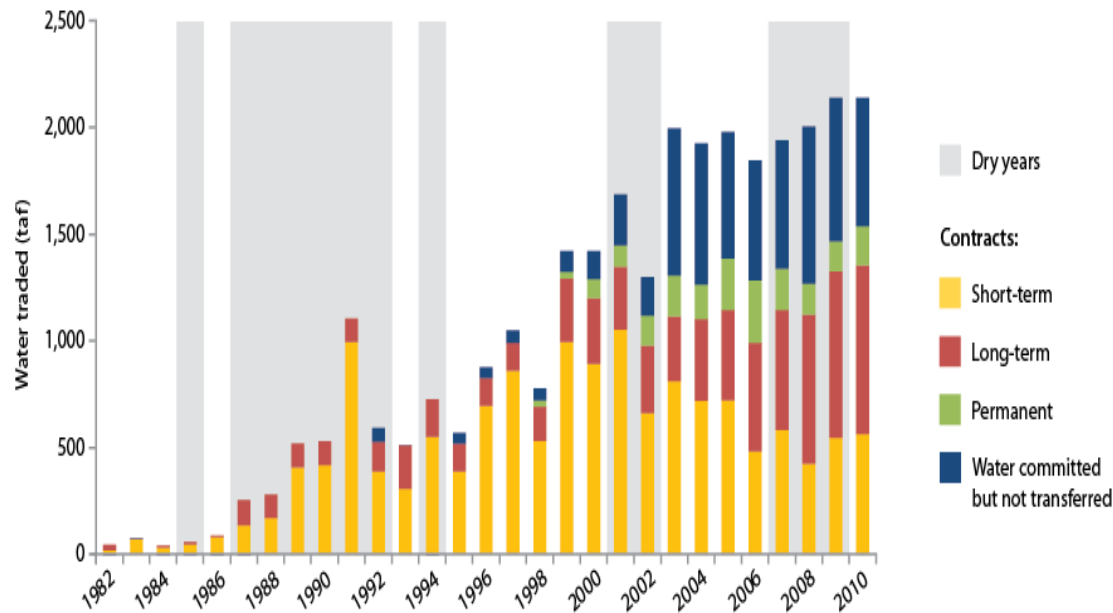
Reduce Vulnerability to Supply Interruptions

- Decide on a Delta solution
- Address local infrastructure weaknesses
- Collaborate with developers to supply water for growth



Strengthen Water Market and Groundwater Banking

Water market leveled off in early 2000s



- Reduce infrastructure & institutional barriers to water market
- Improve local groundwater basin management

Reduce Flood Risk Exposure

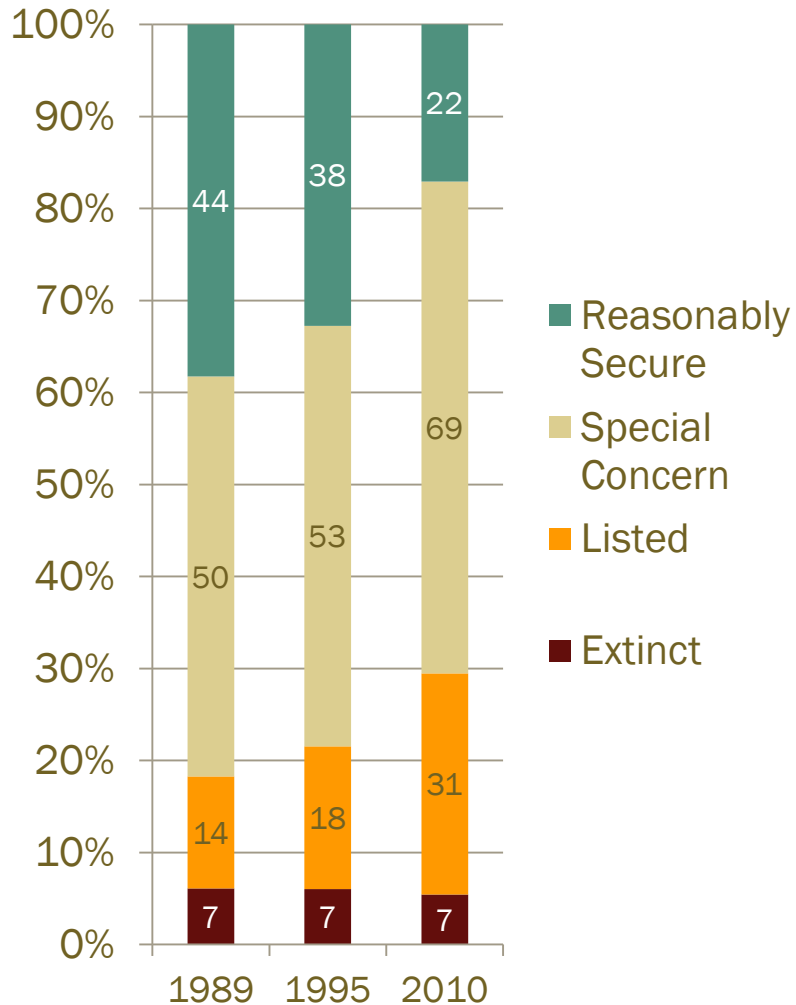


Yolo Bypass

- Improve property owner incentives
 - Risk-based assessments
 - Insurance
- Make more room for rivers
 - Lowers economic risk
 - Better for environment

Improve Effectiveness of Environmental Management

Native fishes in trouble



- Healthy watersheds support the economy
- Ecosystems in decline despite decades of well-intentioned efforts
- Shift from piecemeal regulation to more coordinated, accountable approaches

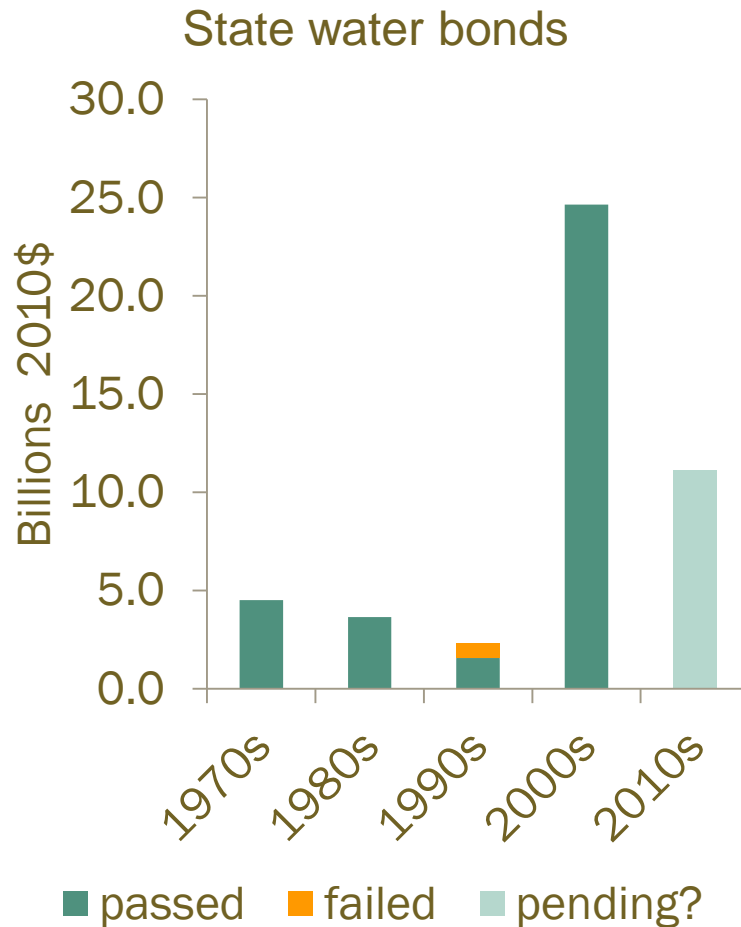
Develop Sustainable Funding: Key Gaps Are in Smallest Areas

Area	Annual spending	Primary Source	Adequacy
Water supply infrastructure	\$22 billion	Ratepayers	OK
Wastewater infrastructure	\$10 billion	Ratepayers	OK
Flood management infrastructure	\$1.7 billion	Current policy goals: Federal (65%) State (20-25%) Landowners (10-15%)	FAILING
Ecosystem management	\$0.5 billion (regulatory agencies)	State general obligation (GO) bonds, ratepayers	FAILING
State planning and oversight	\$0.1 billion	State general fund, GO bonds	FAILING

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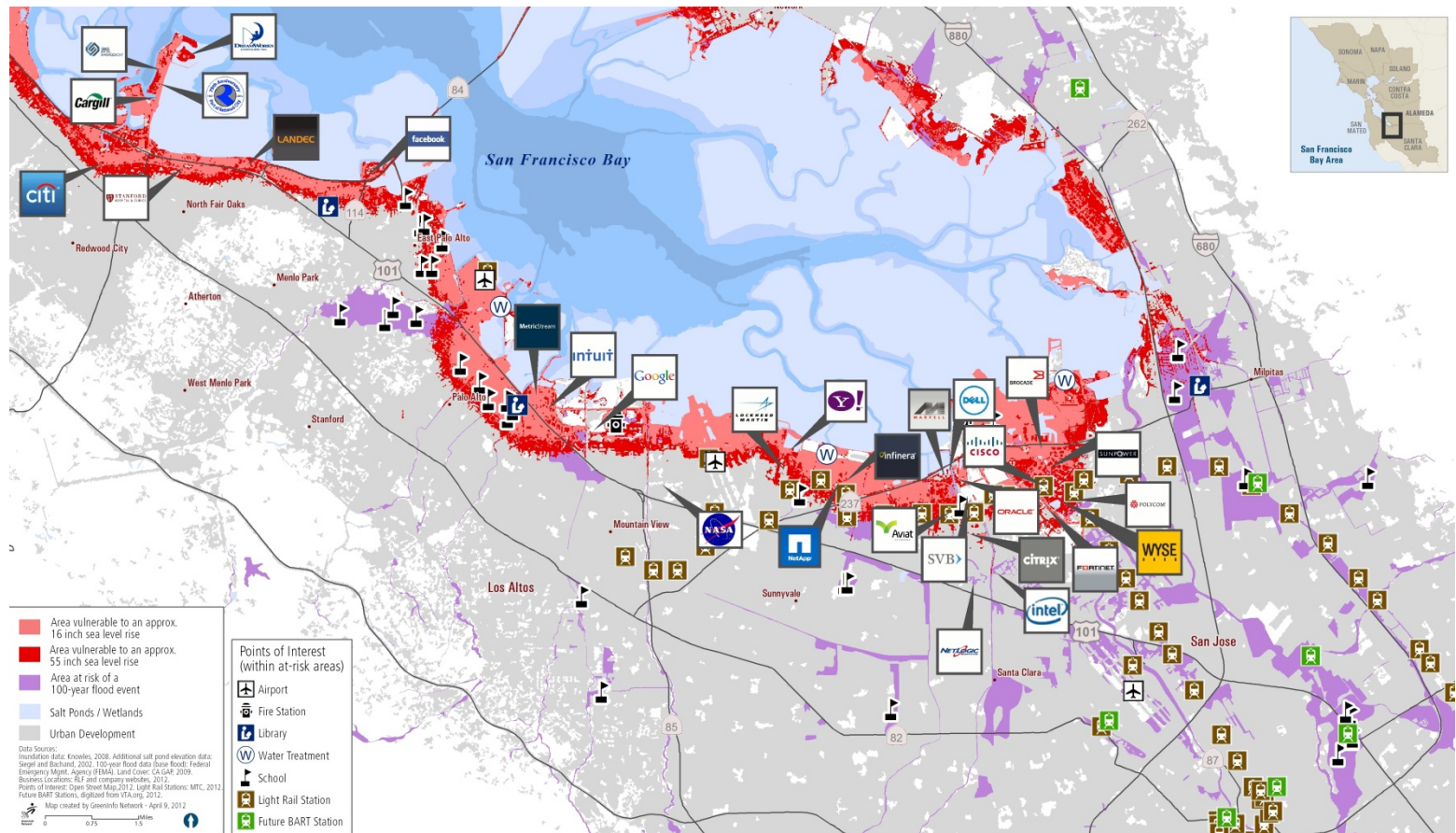
Uncertain Future for State GO Bond Funding



- Many valuable uses
- Vital for environment and floods
- But unreliable and disruptive
- And losing popularity?

Business Leaders and Others Need to Promote Water Reform

New Bay Area public-private partnership aims to enhance ecosystem and address extreme flood risks in Silicon Valley



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Notes on the use of these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Thank you for your interest in this work.